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Sur, S.; Vishnu, A.; Jin, H.-W.; Panda, D.K.; Huang, W.;
 High Performance Interconnects, 2005. Proceedings. 13th Symposium on
 17-19 Aug. 2005 Page(s):45 - 50
 Digital Object Identifier 10.1109/CONECT.2005.10
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2. Evaluating InfiniBand performance with PCI Express

Jiuxing Liu; Mamidala, A.; Vishnu, V.; Panda, D.K.;
 Micro, IEEE
 Volume 25, Issue 1, Jan.-Feb. 2005 Page(s):20 - 29
 Digital Object Identifier 10.1109/MM.2005.9

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3. IBIST/spl trade/ (interconnect built-in-self-test) architecture and methodology for PCI Express

Nejedlo, J.J.;
 Test Conference, 2003. Proceedings. ITC 2003. International
 Volume 2, 30 Sept.-2 Oct. 2003 Page(s):114 - 122 Vol.2
 Digital Object Identifier 10.1109/TEST.2003.1271201

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4. A digitized LVDS driver with simultaneous switching noise rejection

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 4-5 Aug. 2004 Page(s):240 - 243
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5. Localized congestion control in advanced switching Interconnects

Krishnan, V.; Mayhew, D.;
 Micro, IEEE
 Volume 25, Issue 1, Jan.-Feb. 2005 Page(s):10 - 11
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6. Design and verification for PCI Express controller

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 Volume 1, 4-7 July 2005 Page(s):581 - 586 vol.1
 Digital Object Identifier 10.1109/ICITA.2005.113

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7. **Scheduling of MPI-2 One Sided Operations over InfiniBand**
Wei Huang; Santhanaraman, G.; Hyun-Wook Jin; Panda, D.K.;
Parallel and Distributed Processing Symposium, 2005. Proceedings. 19th IEEE International
04-08 April 2005 Page(s):215a - 215a
Digital Object Identifier 10.1109/IPDPS.2005.391
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Circuits and Systems, 2004. ISCAS '04. Proceedings of the 2004 International Symposium on
Volume 4, 23-26 May 2004 Page(s):IV - 157-60 Vol.4
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9. **PCI express and advanced switching: evolutionary path to building next generation interconnects**
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High Performance Interconnects, 2003. Proceedings. 11th Symposium on
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Sui, S., Vishnu, A., Jin, H.-W., Panda, D.K., Huang, M.
Dept. of Comput. Sci. & Eng., Ohio State Univ., Columbus, OH, USA
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Abstract

InfiniBand is emerging as a high-performance interconnect. It is gaining popularity because of its high performance and open standard. Recently, PCI-Express, which is the third generation high-performance I/O bus used to interconnect peripheral devices, has been released. The third generation of InfiniBand adapters allow applications to take advantage of PCI-Express. PCI-Express offers very low latency access of the host memory by network interface cards (NICs). Earlier generation InfiniBand adapters used to have an external DIMM attached as local NIC memory. This memory was used to store internal information. This memory increases the overall cost of the NIC. In this paper we design experiments, analyze the performance of various communication patterns and end applications on PCI-Express based systems, whose adapters can be chosen to run with or without local NIC memory. Our investigations reveal that on these systems, the memory fetch latency is the same for both local NIC memory and host memory. Under heavy I/O bus usage, the latency of a scatter operation increased only by 10% and only for message sizes 1B - 4 KB. These memory-less adapters allow more efficient use of overall system memory and show practically no performance impact (less than 0.1%) for the NAS parallel benchmarks on 8 processes. These results indicate that memory-less network adapters can benefit next generation InfiniBand systems.

Terms

Inspect

Controlled Indexing

computer architecture, file organisation, network interfaces, peripheral interfaces

Non-controlled Indexing

InfiniBand, NAS parallel benchmark, NIC, PCI-Express, external DIMM attachment, generation, high-performance I/O bus, high-performance interconnect, host memory, memory-less adapter, network interface card, peripheral device

Author Keywords

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References

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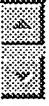
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<u>L3</u> (PCI adj1 Express\$5) same transmit\$3 same receiver same value same bit	1 <u>L3</u>
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5 L4

L4 (PCI adj1 Express) same mode

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11 L3

L3 11 and L2

57 L2

L2 (PCI adj1 Express) same mode

L1 710/100,33,300-302,72,306,313;345/520,531;361/679,683,783;709/253;326/37.ccls.

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